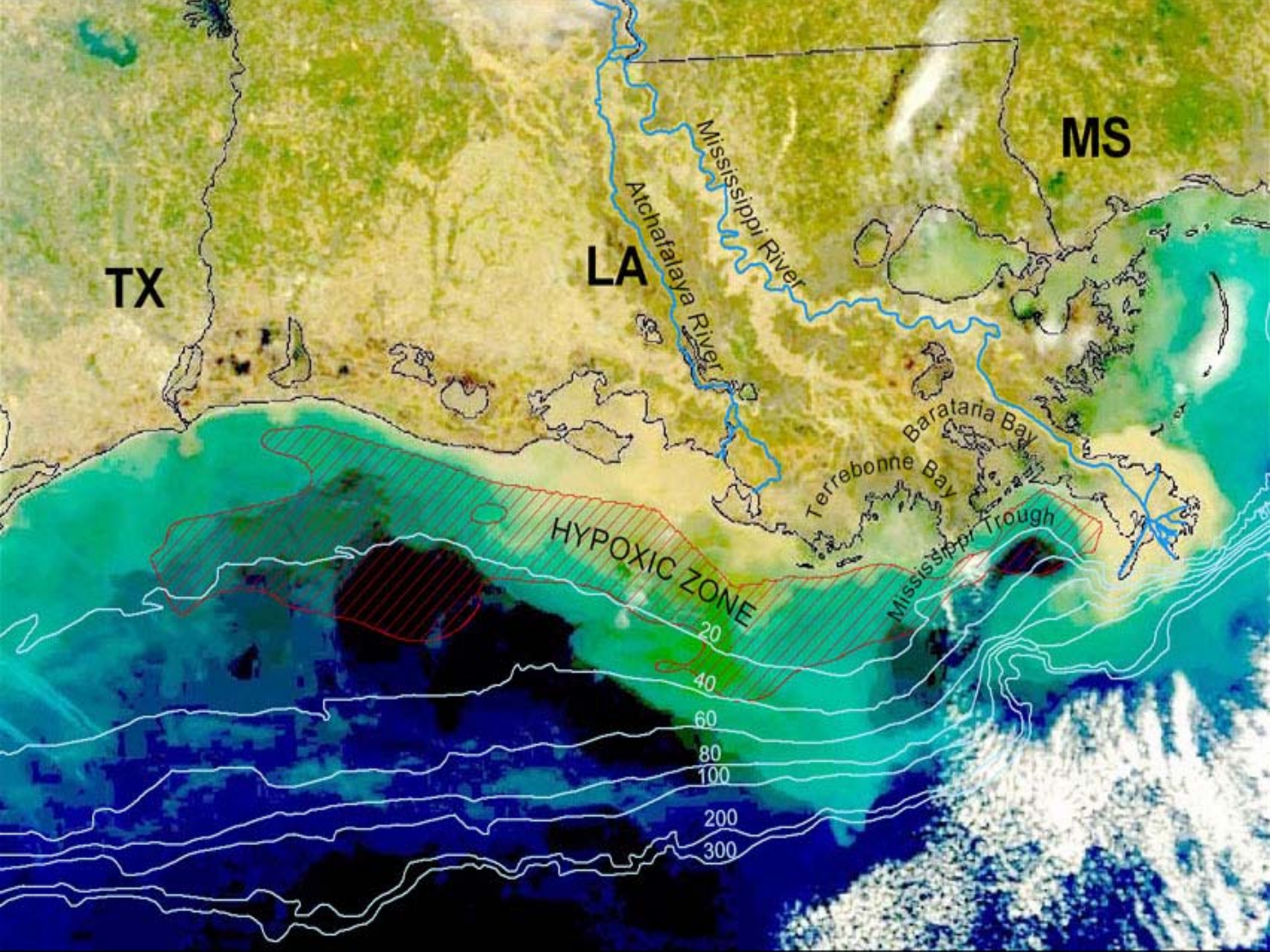




# Hypoxia Action Plan 2008

April 2008





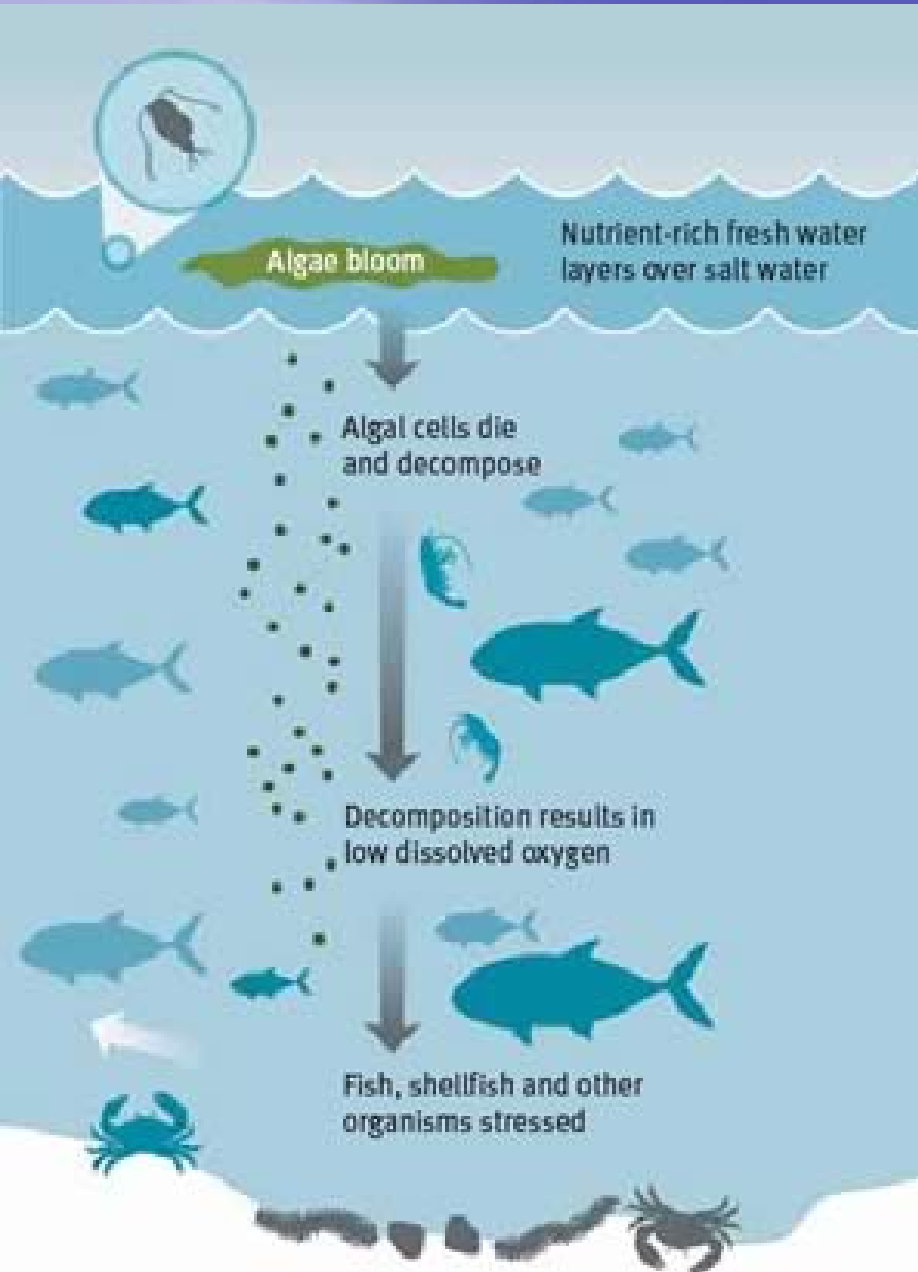


# Gulf of Mexico

- 9<sup>th</sup> Largest Water Body in the World
- 60% of US drains into the Gulf (MS River 90% of Fresh Water entering the Gulf)
- 33 Major River Systems
- Most Productive Fishery in the World
  - 1.7 Billion Pounds of Fish
  - 231 Million Pounds of Shrimp
  - 24.4 Million Pounds of Oysters
    - More Fish, Shrimp & Shellfish than Mid-Atlantic, Chesapeake Bay and New England combined.
- Energy
  - 23% of U.S. Natural Gas
  - 30% of U.S. Oil



# *Gulf Hypoxia*

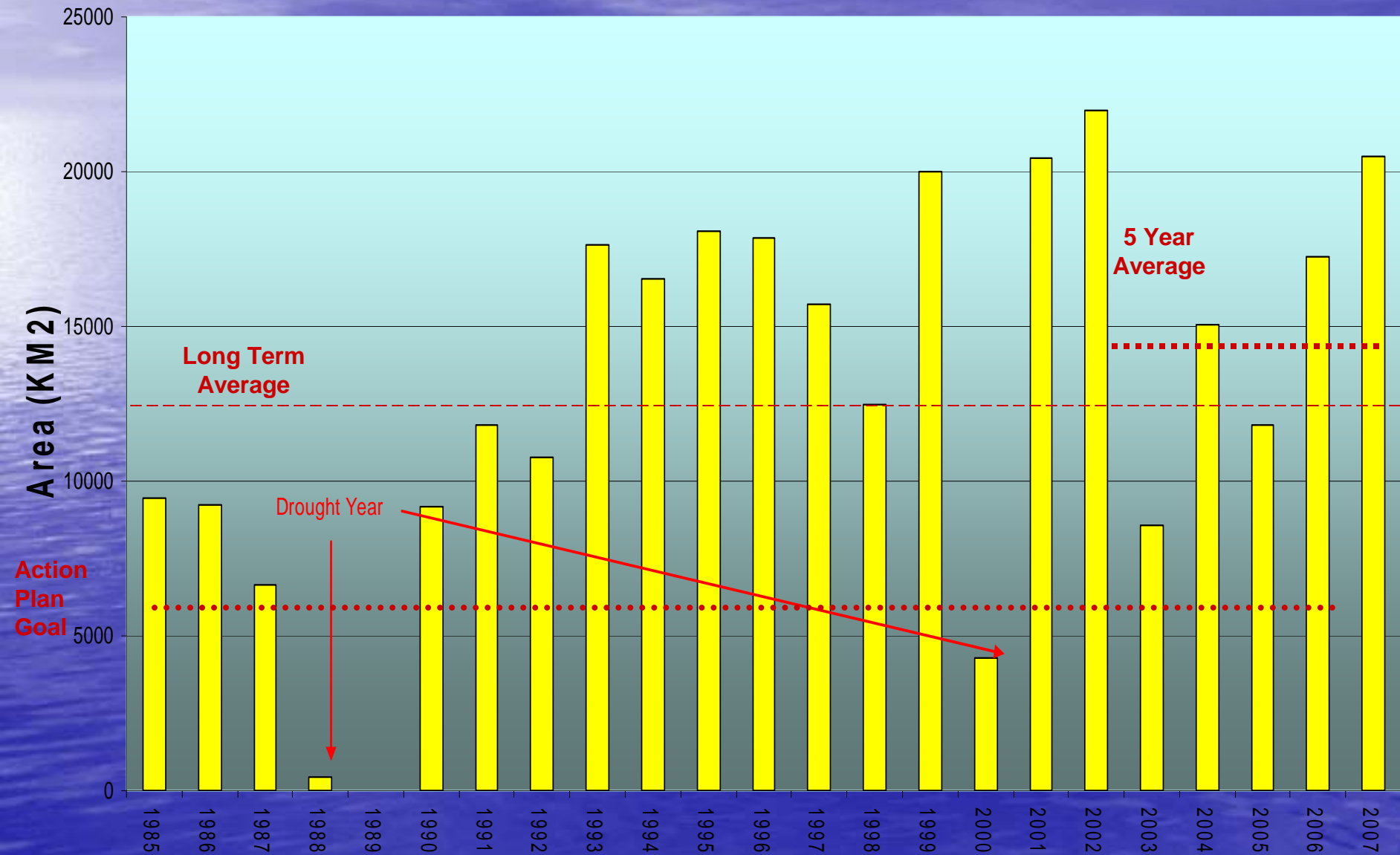


# Northern Gulf Hypoxia

- Possible Contributors
  - Increased Nutrients (N & P)
  - Decreased Silica
  - Loss of Lower MS River Flood Storage (Levees)
  - Loss of Coastal Wetlands
  - Discharge of MS River near the Continental Shelf
  - Climate Change



## *Estimated Area of Bottom Water Hypoxia in Mid Summer*



# Policy Themes for Reassessment

- Acknowledge the social, political & economic changes & links to emerging issues & policies
- Ensure greater specificity & accountability & tie to funding strategies
- Track program & environmental progress
- Adapt to new scientific findings
- Maximize opportunities for stakeholder involvement
- Reexamine roles & responsibilities of Task Force partners

# Principles for Reassessment

- Encourage voluntary, incentive-based practical, & cost-effective actions
- Utilize existing programs
- Adaptive Management
- Identify funding needs
- Identify opportunities & barriers
- Provide measurable outcomes



# Nutrient Loads t the Gulf

- Nitrogen
  - 810,000 – 2,210,000 metric tons/year
  - 80 % from Ohio/TN & Upper MS
  - 21% decrease from 2001 – 2005
- Phosphorus
  - 80,700 – 180,000 metric tons/year
  - 12% increase from 2001 - 2005

# The Reassessment SAB Charge

- Address the state of the science of hypoxia as well as the scientific basis for mitigating hypoxia through management options
- Focus on scientific advancements since 2000 relating to 3 general areas:
  - Characterization of the Causes of Hypoxia
  - Characterization of Nutrient Fate, Transport and Sources
  - Scientific Basis for Goals and Management Options

➤ SAB report URL - [http://www.epa.gov/sab/pdf/5-24-07\\_hap\\_draft.pdf](http://www.epa.gov/sab/pdf/5-24-07_hap_draft.pdf)





# HAP Findings

- Non-point sources of N (1999-2005)
  - 54% fertilizer
  - 37% N<sub>2</sub> fixation
  - 9% atmospheric deposition
- New estimates of point source N & P
  - 22% of N flux  
(up from 11% in 2000)
  - 34% of P flux
- Manure more significant source of P than N

# HAP Findings

- In-stream removal (denitrification)
  - significant in during warm, low flow periods, but not significant during high flows in Jan-June (peak nitrate export)
- The *HAP recommends*
  - enhance hydrologic exchange & retention on floodplains
  - targeted wetlands restoration



# HAP Findings

- Reassess/revise N & P goals within adaptive management framework as new information becomes available
  - more important to move in a “directionally correct” fashion and learn from monitoring results, rather than delay action
  - may need to be revised in the future
  - **coastal goal appropriate for now**
- Reducing hypoxic zone & enhancing Basin water quality are inextricably & positively linked
- Co-benefits of nutrient reduction
  - greenhouse gas mitigation
  - improved wildlife habitat & recreational opportunities
  - flood control & other ecosystem services
- Social benefits will likely exceed social cost over the long run, if not the short term, & thus enhance social welfare

# HAP Recommendations

- Strategic conservation measures & approach to evaluate success
- Enhanced monitoring at different temporal and spatial scales
- Modeling and monitoring approaches addressing critical management questions
- 40% P load reduction goal
- 45% N load reduction goal



# Most Effective Agricultural Practices

- Optimal choices will likely include:
  - drainage water management,
  - conservation tillage,
  - manure management,
  - changing fertilizer application rates and timing,
  - crop rotation,
  - cover crops,
  - conservation buffers,
  - wetlands enhancement
- Watersheds with greatest potential for N and P reductions should be targeted for action to ensure cost-effectiveness
- Targeting allows optimization of cost and benefits.
- An array of economic incentives are recommended to encourage conservation

# Management Options Nonpoint Sources

Atmospheric deposition and urban/suburban storm water runoff are the two major non-agricultural NPS

- Tighter limits on sources of NO<sub>x</sub> emissions would assist hypoxia reduction and improve water quality.
- Incorporating water quality benefits into decisions involving:
  - Retirement or retrofitting of old coal-fired power plants,
  - NO<sub>x</sub> controls - extension of current summertime NO<sub>x</sub> standards to a year-round requirement,
  - Emissions standards & mileage requirements for SUV's, heavy trucks and buses.



# Management Options Point Sources

- The *HAP recommends*
  - Upgrade sewage treatment plants in MARB to Biologic Nutrient Removal (BNR) or Enhanced Nutrient Removal (ENR) technologies (N: 3.0 mg/l & P: 0.3 mg/l)
  - MARB sewage treatment plants upgrade to achieve total N concentrations of 3 mg/L and total P concentrations of 0.3 mg/L.
- For industries with high nutrient discharges
  - Use a targeted permit by permit approach.
  - Evaluate for opportunities to reduce N and P discharges through pollution prevention, process modification or treatment

# 2008 Gulf Hypoxia Action Plan

- **Coastal Goal**

- Subject to the availability of additional resources, we strive to reduce or make significant progress towards reducing the 5-year running average aerial extent off the Gulf of Mexico hypoxic zone to less than 5,000 square kilometers by the year 2015 through implementation of specific, practical, and cost effective voluntary actions by all States, Tribes, and address all categories of sources and removals within the Mississippi/Atchafalaya River Basin to reduce the annual discharge of nitrogen and phosphorus into the Gulf.



# 2008 Gulf Hypoxia Action Plan

- **Within Basin Goals, unchanged.**
  - To restore and protect the waters of the 31 States and Tribal lands within the MS/Atchafalaya River Basin through implementation of nutrient and sediment reduction actions to protect public health and aquatic life as well as reduce the negative impacts of water pollution on the Gulf of Mexico.
- **Quality of Life Goal, unchanged**
  - To improve the communities and economic conditions across the MS/Atchafalaya River Basin, in particular the agriculture, fisheries and recreation sectors, through improved public and private land management and a cooperative, incentive based approach.

# 2008 Gulf Hypoxia Action Plan

- Federal Members to create a “Hypoxia Caucus”
- Federal Members attempt to develop cross-cutting budget for GOM Hypoxia for 09 budget.
- Development of one year Operating Plan
- States consider a State-Led Coalition
- Signing Ceremony on the Lower River



# 2008 Gulf Hypoxia Action Plan

## Tentative Schedule

- *Draft 2008 GHAP* to appear in the *Federal Register*.  
November 15, 2007
- Public Comment period until January 4, 2008.
- January 29-30th, 2008 – Coordinating Committee Meeting to review public comments, operations plan and prepare agenda for Task Force Meeting
- February 15, 2008 – documents to the Task Force
- February 28-29, 2008 – Task Force Meeting in Chicago to finalize the Draft Action Plan and Operations Plan
- Signing Ceremony on the Lower River, Spring 2008

# *Questions?*

